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SHORT COMMUNICATION

PERFORMANCE OF FORAGE PEARL MILLET GENOTYPES UNDER DIFFERENT NITROGEN LEVELS

L. K. MIDHA*, SATYAWAN ARYA, PUMMI KUMARI AND U. N. JOSHI

Forage Section, Department of Genetics & Plant Breeding
CCS Haryana Agricultural University,
Hisar-125 004 (Haryana), India
**(e-mail : midhalalit55@gmail.com)*

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SUMMARY

A field experiment was conducted at main Forage Research Area of Department of Genetics & Plant Breeding, CCSHAU, Hisar during **kharif** 2012 to find out the relative performance of pearl millet genotypes at different nitrogen levels for high forage production. The treatments consisting of four pearl millet genotypes [NDFB-904, PAC-981, Raj Bajra Chari (NC) and Giant Bajra (NC)] and four nitrogen levels (0, 30, 60 and 90 kg N/ha) were laid out in factorial randomized block design with three replications. The genotype Giant Bajra significantly outyielded all the other three genotypes. The growth and fodder yield of pearl millet genotypes were also influenced significantly by different nitrogen levels. The application of 90 kg N/ha produced 45, 18 and 8 per cent higher green fodder yield and 51, 22 and 13 per cent higher dry matter yield over 0, 30 and 60 kg N/ha, respectively.

Key words : Dry matter yield, nitrogen, crude protein, pearl millet

Forages are the mainstay of animal wealth and their production is the backbone of livestock industry. In our country, there is a short supply of about 40 per cent green fodder particularly during summer season. Pearl millet is an important cereal fodder crop grown during summer and rainy season in south-west region of Haryana. It is drought resistant, with quick growth habit and palatable to animals and gives an opportunity to supply green fodder during the scarcity period particularly during April-June. It can be fed to animals at any stage of crop growth without adverse effect (Arya *et al.*, 2013). As pearl millet is a cereal crop, it responds well to nitrogen because nitrogen is one of the main essential plant nutrients for profuse growth and high yield (Singh *et al.*, 2014). After scanning of literature, it has been observed that the information on relative performance of pearl millet genotypes for high forage production under various nitrogen levels is little, therefore, the present investigation was undertaken.

The field experiment was conducted at main Forage Research Area, CCSHAU, Hisar during **kharif** 2012. The experiment was laid out in factorial randomized block design with three replications. Treatments were consisted of four pearl millet genotypes [NDFB-904, PAC-981, Raj Bajra Chari (NC) and Giant Bajra (NC) and four nitrogen levels (0, 30, 60 and 90 kg N/ha]. The soil of experimental field was sandy loam in texture, low in organic carbon and available nitrogen and medium in available phosphorus and potassium. The crop was sown on July 26, 2012. The half dose of nitrogen was applied as basal at the time of sowing and rest half after 21 days of crop sowing. The crop was harvested for fodder at 50 per cent flowering and samples were collected at harvest and analyzed for quality parameters by standard procedures.

The growth and fodder yield of pearl millet were affected significantly with genotypes (Table 1). In genotype Giant Bajra, the highest plant height (198.1 cm) and number of tillers/m row length (31.2) were recorded as compared to other genotypes. The genotype Giant Bajra significantly outyielded all the other genotypes with respect to fodder and dry matter yields. The Giant Bajra recorded highest green fodder yield of 383.3 q/ha and dry matter yield of 74.4 q/ha followed by genotype PAC-981 (344.8 q/ha green fodder and 69.3 q/ha dry fodder yield, respectively). This was due to the superiority of the genotype to produce more values of growth characteristics like plant height and number of tillers per metre row length. The highest green fodder and dry matter yield by Giant Bajra in Punjab and Haryana were

TABLE 1
Effect of various nitrogen levels on growth, yield and quality of forage pearl millet

Treatment	Green fodder yield (q/ha)	Dry matter yield (q/ha)	Plant height (cm)	No. of tillers/ metre row length	Leaf : stem ratio	Crude protein content (%)	Crude protein yield (q/ha)
Varieties/Genotypes							
NDFB-904	297.5	60.1	165.8	25.6	0.66	11.36	6.84
PAC-981	344.8	69.3	186.1	30.2	0.64	10.92	7.79
Raj Bajra Chari (NC)	315.7	64.5	173.3	28.9	0.63	12.17	7.80
Giant Bajra (NC)	383.3	74.4	198.1	31.2	0.67	11.75	8.73
C. D. (P=0.05)	18.8	4.4	11.9	2.3	NS	-	-
Nitrogen levels (kg/ha)							
0	266.4	52.8	126.3	24.3	0.60	10.96	5.72
30	329.7	65.5	149.5	27.5	0.63	11.49	7.46
60	358.0	70.3	160.8	30.8	0.66	11.61	8.20
90	387.2	79.7	187.4	32.7	0.67	12.13	9.59
C. D. (P=0.05)	18.8	4.4	11.9	2.3	NS	-	-

NS–Not Significant.

also reported by Singh *et al.*, 2012).

Crude protein content was also affected by different genotypes. The highest crude protein content (12.17%) was recorded in Raj Bajra Chari (NC) followed by Giant Bajra (11.75%), whereas the highest protein yield was recorded in Giant Bajra (8.73 q/ha) followed by Raj Bajra Chari (7.80 q/ha). This may be due to higher dry matter yield of Giant Bajra.

As far as nitrogen levels were concerned, there was significant increase in growth parameters and yield with increasing levels of nitrogen up to 90 kg N/ha. The maximum plant height (187.4 cm) and number of tillers (32.7) were observed at 90 kg N/ha which were higher than lower doses of nitrogen. The highest green fodder and dry matter yield of 387.2 and 79.7 q/ha, respectively, were recorded with 90 kg N/ha and these were significantly superior to the lower levels of nitrogen. The vegetative growth of plant was positively correlated for high green fodder yield and dry matter accumulation. The application of 90 kg N/ha produced 45, 18 and 8 per cent higher green fodder yield and 51, 22 and 13 per cent higher dry matter yield over 0, 30 and 60 kg N/ha, respectively. Similar results were also obtained by Pathan and Bhilare (2009), Singh *et al.* (2012) and Damame *et al.* (2013). The protein content and protein yield also increased with increasing levels of nitrogen up to the highest dose i. e. 90 kg N/ha. The highest green fodder, dry matter and crude protein yield at 100 kg N/ha were also reported by Bhilare *et al.* (2010).

The genotype Giant Bajra gave significantly higher fodder yield as compared to other genotypes and the crop responded up to 90 kg N/ha.

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